

## Credit Risk Management Practices and Asset Quality of Deposit Taking Savings and Credit Co-Operative Societies in Kenya

### ABSTRACT

Despite the key role DT-SACCOs play towards the growth of Kenyan economy, there is reported increasing occurrence of unsustainable levels of NPLs among these financial institutions. The increasing occurrence of NPLs are significantly obstructing asset quality; highly threatening their survival. This study closed this gap by assessing; risk identification, risk measurement, risk monitoring, and risk governance as determinants of Kenya DT-SACCOs. The study used descriptive research design with the credit managers of Kenya's 176 licensed DT-SACCOs as the target population. The study employed census because the sample size was modest, easily accessible, and controllable. The data for the study was gathered from primary sources utilizing questionnaire. To create descriptive statistics for the study, the data was analyzed using quantitative analysis. Inferential statistics was then used to obtain a model. The study found that, at 5% significance level, risk identification has positive significant effect on asset quality of DT-SACCOs in Kenya in Kenya ( $p=0.015$ ;  $\beta= 0.337$ ;  $r= 0.394$ ). risk measurement has a statistically significant and positive effect on asset quality of DT-SACCOs in Kenya ( $p=0.023$ ;  $\beta=0.212$ ;  $r= 0.358$ ), risk monitoring has positive significant effect on asset quality of DT-SACCOs in Kenya ( $p= 0.049$ ;  $\beta= 0.182$ ;  $r= 0.467$ ) and risk governance positively and significantly affects asset quality of DT-SACCOs in Kenya ( $p= 0.034$ ;  $\beta= 0.236$ ;  $r= 0.470$ ). The study recommends that the DT-SACCOs in Kenya should; enhance their risk identification policies by ensuring that their procedure authenticity of business proposal and business plan are effective to be able to identify credit risks and net worth of the borrowers, enhance their risk measurement procedure to ensure that there is thorough analysis and appraisal of the borrower before approving loan. enhance their risk monitoring policies and procedures to ensure approval authorities are well specified and empowered, and ensure their risk governance guidelines correctly address credit procedures and policies on review and recommendations and clearly spell out the requirements concerning checks on collateral of the borrower during credit review.

Keywords: *Asset Quality, Risk Governance, Risk Identification, Risk Measurement, Risk Monitoring.*

### 1. INTRODUCTION

#### 1.1 Background of the Study

Savings and Credit Cooperatives (SACCOs) have emerged as effective financial intermediaries, particularly Deposit Taking Savings and Credit Co-operative Societies (DT-SACCOs), which prioritize their members' social and economic welfare by promoting savings and providing financial services (Bolton, 2019). DT-SACCOs have a significant opportunity for growth as they primarily depend on member contributions for capital, making them crucial sources of finance in underserved areas (Alliance for Financial Inclusion, 2017). They generate revenue through loans, which constitute their major asset, although maintaining a healthy balance of high-yielding and non-performing loans (NPLs) is essential for profitability (Barus et al., 2017; Mac Donald & Koch, 2016). However, poor asset quality can hinder the sustainability of DT-SACCOs, leading to financial instability and a reduced ability to operate effectively (SASRA, 2020). Poor asset quality has emerged as a primary factor in bank collapses globally, particularly following the 2007-2008 financial crisis, which saw a significant rise in non-performing loans (NPLs) and deteriorating loan performance (Kportorgbi et al., 2019; Muriithi, 2013). The crisis had widespread repercussions, affecting the economic conditions and socio-economic landscape of various nations, with Europe experiencing an NPL rate of 5.1% of total loans, especially high in Italy and Greece (Navaretti et al., 2017; Mingaleva et al., 2014).

In Africa, particularly in sub-Saharan countries, NPLs also increased post-crisis, driven by factors such as inadequate credit appraisal and poor tracking of loans (Vatansever & Hepsen, 2013; Gezu, 2014). Studies in Nigeria indicate a strong correlation between asset quality and bank profitability, while research in Ghana highlights the benefits of substantial investments in real assets over intangible ones (Lucky & Andrew, 2015; Gatsi et al., 2016).

In Kenya, asset quality has been identified as a predictor of financial performance for banks, with studies showing a significant relationship between asset quality and bank success (Mburu, 2017; Sile et al., 2019). The country has faced challenges with NPLs since the 1980s, and high default rates significantly impact credit risk (Musau, 2014; Karumba & Wafula, 2012). From 2012 to 2014, the ratio of NPLs to gross loans in Kenya rose, reflecting the effects of inadequate credit risk control (CBK, 2015). The growing exposure of Kenyan Deposit Taking Savings and Credit Cooperative Societies (DT-SACCOs) to credit risk underscores the necessity of effective loan processing management to ensure their financial health and sustainability (Kargi, 2014).

In Kenya, SASRA mandates that every DT-SACCOs to maintain a statutory minimum liquidity ratio of 15% of all deposit liabilities, including matured and short-term liabilities (SASRA, 2016). However, many DT-SACCOs face significant liquidity management challenges, leading to a troubling failure rate of 51%, which has adversely affected over half of Kenya's population (Waithera, 2015). In response, SASRA has revoked the licenses of several DT-SACCOs over the past three years due to severe liquidity issues, restricting them from accepting public deposits.

The average minimum liquidity ratio for DT-SACCOs has declined from 55.90% to 49.95%, prompting discussions about establishing a central liquidity facility to assist those struggling to meet short-term obligations (SASRA, 2017). While Barus et al. (2017) found that effective liquidity management positively influences the financial performance of 83 SACCOs in Kenya, Njeru (2016) highlighted that external variables can complicate liquidity management, posing additional risks to these institutions. Overall, the combination of regulatory measures and operational challenges underscores the critical need for effective liquidity management strategies within DT-SACCOs to ensure their sustainability and growth.

Although SASRA has established prudential guidelines aimed at managing financial risks, DT-SACCOs continue to struggle with high NPL rates, which have hindered their growth (Kariuki, 2017). Despite the recommended NPL cap of 5%, the average gross NPL ratio reached 9.6% in 2016 (Maina et al., 2016). Furthermore, the severity of NPLs has led some members to withdraw from SACCOs, indicating significant concerns about financial risk management (Masinde, 2014). The situation has escalated to the point where licenses for five DT-SACCOs were revoked, further constraining the sector's growth (Buluma et al., 2017). Kariuki (2017) suggests that persistent financial risk management issues pose a serious threat to the sustainability and growth of DT-SACCOs in Kenya.

Effective asset and credit risk management are critical to the performance and longevity of DT-SACCOs, as they face significant challenges related to credit vulnerabilities and the risk of NPLs (Bhattarai, 2019; Murithi et al., 2016). Studies indicate that robust credit risk management practices significantly influence the financial success of these cooperatives (Mogga et al., 2018; Gegehii, 2016). Such practices include comprehensive risk identification, monitoring, and management strategies, which are vital for optimizing performance and ensuring the financial stability of DT-SACCOs in Kenya (SASRA, 2021).

## **1.2 Statement of the Problem**

Most Deposit Taking Savings and Credit Cooperatives in Kenya are struggling to meet the mandated minimum capital adequacy ratios of 10% for core capital to total assets, 8% for core capital to deposit liabilities, and 8% for institutional capital to total assets. Despite regulatory oversight from SASRA, there has been a consistent rise in loan defaults, significantly impacting asset quality. The non-performing loan ratio increased from 5.22% in 2016 to 6.14% in 2017, and further to 6.30% in 2018, indicating ongoing deterioration (SASRA, 2018; SASRA, 2019). Although there was a slight improvement to 6.15% in 2019, the NPL ratio worsened again to 8.39% in 2020, illustrating ongoing challenges for DT-SACCOs in fulfilling short-term obligations (SASRA, 2020; SASRA, 2021). This decline in asset quality has prompted some DT-SACCOs to downsize or consider mergers to sustain operations, further highlighting the risks they face. Various studies emphasize the need for effective credit risk management to enhance asset quality, with findings suggesting that consistent monitoring and adherence to credit policies are crucial for improving financial stability (Lawal et al., 2018; Shakya, 2017; Nwude & Okeke, 2018; Vigneswara, 2015). However, existing research has primarily focused on developed countries, leaving a gap regarding the specific challenges faced by DT-SACCOs in Kenya, which this study addressed by examining the impact of credit risk factors on asset quality.

## **1.3 Objectives of the Study**

The main objective of the study was to assess effect of credit risk management on asset quality of DT-SACCOS in Kenya.

The specific objective guiding the study were;

1. To establish the effect of risk identification on asset quality of DT-SACCOS in Kenya.
2. To find out the effect of risk measurement on asset quality of DT-SACCOS in Kenya.
3. To establish the effect of risk monitoring on asset quality of DT-SACCOS in Kenya.
4. To find out the effect of risk governance on asset quality of DT-SACCOS in Kenya.

## **2. LITERATURE REVIEW**

Intentionally, this thesis chapter provides a summary of theoretical and scientific literature in this chapter, which was considered to be useful in establishing and advising a conceptual framework.

### **2.1 Theoretical literature review**

In this study, various theories including; modern portfolio theory (MPT), risk management theory, were found useful for informing the concept of the study. These theories are reviewed here under.

#### **Modern Portfolio Theory (MPT)**

Markowitz's Modern Portfolio Theory (MPT), proposed in 1955, suggests that risk-averse investors can construct a portfolio that yields optimal expected returns for a given level of risk, highlighting the importance of underlying credit risk in return determination. Over the past two decades, Deposit Taking Savings and Credit Cooperatives (DT-SACCOs) have actively applied MPT principles to manage credit risk (Tajudeen et al., 2018). Credit risk remains a significant challenge for businesses, and despite efforts to use MPT for its management, success has been limited (Margrabe, 2007). Traditionally, banks have employed an asset-by-asset approach to credit risk assessment, which involves periodic evaluations of loan quality and the application of credit ratings to estimate potential portfolio losses (Gakure et al., 2012). This method allows managers to monitor credit quality changes in real time and make timely adjustments to portfolio strategies based on loan performance. However, this asset-by-asset approach does not fully encompass the overall portfolio credit risk, which refers to the risk that actual losses may surpass expected losses. As a result, banks are increasingly shifting towards quantitative portfolio analysis using credit models to better understand

and manage credit risk. This transition aims to address the limitations of the asset-by-asset policy and improve the assessment of unforeseen risks.

### **Risk Management Theory**

Risk Management Theory, as developed by Darwin and Bidek (1977), emphasizes the importance of identifying and allocating credit risks, prioritizing these risks, and organizing financial capital for effective economic implementation (Al-Husainy & Jadah, 2021; Wenk, 2010). The theory advocates for minimizing the impact of adverse events, monitoring and controlling risks, and enhancing the potential for success. It suggests that financial capital should be protected against both expected and unexpected threats, as unaddressed risks can negatively affect shareholder equity (Kirigo, 2014). Effective credit risk management is crucial for the productivity of Deposit Taking Savings and Credit Cooperatives (DT-SACCOs) in Kenya. Dorfman (2007) asserts that risk identification and assessment are vital for all lending entities, including DT-SACCOs, making credit risk detection and evaluation essential for growth. This study indicates that credit risk management significantly influences the asset quality of DT-SACCOs in Kenya, underscoring the need for competent credit risk managers to enhance financial stability and growth.

### **2.2 Empirical literature review**

Various empirical research work on wealth efficiency have been reviewed. These studies were able to explain risk identification and its relationship to asset quality; asset quality and its relationship to risk measurement; asset quality and credit risk management; and asset quality's relationship to risk governance.

Research conducted by Makori (2018) revealed a positive relationship between risk identification and loan performance, indicated by an ANOVA result of less than 0.05, highlighting the significant connection between credit risk identification and loan outcomes. Conversely, Mogga et al. (2018) explored credit risk management methods in South Sudan and found that while banks recognized risk identification as a critical control method impacting profitability, its effect on financial performance was minimal, with risk analysis and evaluation showing even less influence. Bosire (2017) studied credit risk management strategies in Kisii County's microfinance institutions (MFIs) and concluded that risk analysis significantly affects their financial performance. This research utilized descriptive statistics and regression analysis, revealing that MFIs implemented extensive processes for risk identification, including interviews and documentation. Similarly, Wachira (2017) indicated that credit risk management positively impacts the profitability of commercial banks in Nyeri County, emphasizing the importance of evaluating borrower risk to ensure timely loan repayment. Furthermore, Mutua (2015) found a strong correlation between bank performance and credit risk management, particularly through risk recognition. Geitangi (2015) affirmed that robust credit risk recognition led to decreased default rates among bank customers. Effective risk management practices involve thorough assessments of branch procedures and financial statements, employing techniques such as client creditworthiness evaluations and risk rating. Sonali (2015) emphasized the necessity for commercial banks' top management to strictly implement credit risk management strategies established by their boards, ensuring compliance with regulations and effective allocation of responsibilities in loan evaluation and approval. Valsamakis et al. (2015) highlighted that banks should adapt their systems for credit risk identification and assessment to match the complexity of their banking activities, ensuring the provision of timely and relevant information for accurate risk exposure assessment.

Research by Karim (2019) demonstrated that credit risk management strategies positively influence the performance of UK commercial banks, specifically enhancing their return on assets (ROA). The effective use of risk rating techniques was found to correlate with improved ROA ratios. In a related study, Makori (2018) indicated a positive relationship between credit risk assessment and loan performance, supported by ANOVA data highlighting a strong connection between these variables. Conversely, Mogga et al. (2018) found that while risk monitoring and assessment did not significantly impact the financial performance of commercial banks, risk perception was important for the financial outcomes of microfinance institutions (MFIs), as noted by Bosire (2017). Thisika and Muturi (2017) investigated the effects of credit risk management on loan efficiency in Kenyan commercial banks, revealing a significant link between credit assessment and non-performing loans, which positively correlated with loan efficiency. Similarly, Wanjohi (2016) found a strong positive relationship between credit assessment operations and commercial bank profitability. Kwaku (2015) highlighted those certain developmental challenges led to a decline in loan portfolio quality, prompting some banks to reduce lending to riskier segments, particularly small and medium enterprises (SMEs), to enhance portfolio performance. These findings collectively underscore the critical role of effective credit risk management in improving financial outcomes across different banking sectors.

The study by Karim (2019) found that credit risk management methods positively influence asset returns for UK commercial banks, with effective risk assessment techniques correlating with higher asset returns. However, it also indicated no statistically significant relationship between these management techniques and the banks' ability to reduce credit risk or improve financial performance regarding asset returns. Similarly, Makori (2018) identified a positive effect of credit risk assessment on loan performance, with ANOVA results confirming a strong link between these variables. Mogga et al. (2018) further emphasized that risk perception and assessment significantly impact commercial banks' financial performance, while Bosire (2017) noted that risk assessment positively affects microfinance institutions' financial outcomes. Thisika and Muturi (2017) conducted a cross-sectional survey that revealed a statistically significant relationship between credit assessment and non-performing loans in Kenyan commercial banks, with credit evaluation demonstrating a strong correlation with loan performance. Wanjohi (2016) also supported these findings, indicating a positive relationship between credit evaluation practices and commercial bank profitability. Kwaku (2015) focused on the operational challenges of implementing credit risk management systems, noting that some banks faced difficulties

that led to decreased loan portfolio stability. As a result, several banks reduced lending to riskier small and medium enterprises (SMEs) to enhance portfolio performance. Collectively, these studies underscore the critical role of credit risk management in improving loan performance and financial outcomes in the banking sector.

Boateng (2019) utilized the CAMELS rating methodology—focusing on capital adequacy, asset quality, management effectiveness, earnings, liquidity, and market risk sensitivity—to explore credit risk management and its effects on bank performance in Ghana. The findings indicated that earnings play a significant role in determining the performance of Ghanaian banks, with capital sufficiency, asset quality, managerial efficiency, and liquidity also contributing positively to their growth. Bhattarai (2019) investigated the link between credit risk and financial performance in Nepalese commercial banks. His regression analysis found a positive correlation between the capital adequacy ratio (CAR), non-performing loan ratio (NPLR), and quality management ratio (MQR) with financial performance, specifically measured as return on assets (ROA). In contrast, factors like the Credit to Deposit Ratio (CDR) and Risk Susceptibility (RS) showed no significant influence on financial outcomes. Gadzo et al. (2019) employed structural equation modeling to evaluate the impact of credit and operational risks on universal banks' financial performance. Their results highlighted that asset quality and liquidity are significant determinants of financial outcomes. Additionally, Mogga et al. (2018) identified credit clearing as a vital factor influencing the financial performance of commercial banks. Sun and Chang (2018) studied credit risk management in the U.S., focusing on the relationships between CAR and NPLR with profitability indicators such as return on equity (ROE) and ROA. Their findings revealed a negative correlation between NPLR and both ROE and ROA, highlighting challenges in effective credit risk management. In Nigeria, Nwude and Okeke (2018) demonstrated that effective credit risk management positively impacts net loans and advances, as well as the return on assets and return on equity of deposit money banks. Meanwhile, Wachira (2017) emphasized the importance of risk avoidance in credit management and advocated for a balanced approach to assessing borrower risk. Rundassa and Batra (2016) indicated that while asset quality and capital adequacy ratios had minimal effects on ROA, managerial soundness and liquidity were crucial for both ROA and ROE. Bhattarai (2016) also noted a significant influence of credit risk indicators on the profitability of Nepalese banks, underscoring the need for better credit risk management system.

### 3. METHODOLOGY

The research design, target population, sample selection and sampling techniques, and research instrument creation are all covered in this chapter. The steps that were used to ensure the validity and durability of the testing instruments was also included, as well as data collection protocols and data processing, including regression model specification used to validate the study hypotheses. Finally, ethical issues addressed.

#### 3.1 Research design

According to Gupta and Rangi (2014), a study design serves as a comprehensive framework for guiding research, functioning as a roadmap for data collection, analysis, and interpretation. In the context of investigating the influence of credit risk management on the asset quality of DT-SACCOs in Kenya, a descriptive research design was employed. This design effectively summarizes the characteristics of the phenomenon under study, enabling a detailed examination of the variables of interest and their interactions.

#### 3.2 Target Population and Sampling Technique

Target population refers to the whole category of people or objects that the researcher is interested in generalizing the findings of the analysis and providing measurable characteristics (Mugenda & Mugenda, 2008). Furthermore, the target audience is the number of individuals, incidents or experiments that a study would like to generalize, whether actual or hypothetical. According to Kombo & Tromp (2006), the target population is the set of items that the researcher works on and to which the findings obtained by analyzing the sample can be generalized. The study target population was the 176 DT-SACCOs in Kenya (SASRA, 2016). In this research, the unit of analysis was the DT-SACCOs and the unit of observation (where information was collected) will be the managers of these DT-SACCOs.

#### 3.3 Sample

According to Mugenda and Mugenda (2003), census is employed when the target population does not exceed 100 subjects. However, in this analysis, since population of 176 which exceeded 100, the sample size was determined using formula proposed by Saunders Lewis and Thornhill (2018) which is expressed as

$$n = \frac{(X^2 NP(1-P))}{\sigma^2(N-1) + \chi^2(1-P)}$$

n = required sample size

$\sigma^2$  = the degree of accuracy;

$\sigma$  value is 0.05

N = the given population size from the sampling frame

P = Population proportion, assumed to be 0.50

$\chi^2$  = Table value of chi-square for one degree of freedom, which is 3.841

Thus,

$$n = \frac{3.841 \times 176 \times 0.5 \times (1-0.5)}{[0.05 \times 0.05 \times (176-1)] + [3.841 \times (1-0.5)]}, n = \frac{169.05}{2.358} = 71.67 \quad n = 72$$

Thus, the sample size will be 72 respondents

#### 3.4 Instruments.

The research utilized primary data collected through a standardized questionnaire featuring closed-ended questions to assess credit risk management practices among DT-SACCOs. This approach ensured that all respondents, primarily

credit risk managers, provided consistent answers while allowing for some flexibility in their responses. Data was analysed using a 5-point Likert scale, which translates qualitative insights into quantitative values, facilitating easier interpretation of the results (Gupta & Ranghi, 2014; Kothari, 2012).

### 3.5 Data Processing and analysis.

Descriptive data, in particular, means and standard deviations, was used to help define patterns, trends and relationships and to made it easy for the researcher to understand and analyse the results of the analysis. The representation of the findings took the form of tables as well as narrative form. Then, inferential statistics was availed for predicting relationship between the Independent Variables (IVs) and the Dependent Variable (DV). Using inferential statistics, the analysis aimed to create a model for estimating DV (asset quality of Kenyan DT-SACCOs) in terms of IVs (risk identification, risk measurement, risk monitoring, and risk governance) based on the model shown below.;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e \dots\dots\dots (i)$$

Where:

Y = Asset quality of DT-SACCOS in Kenya

X<sub>1</sub> = Risk identification

X<sub>2</sub> = Risk management

X<sub>3</sub> = Risk monitoring

X<sub>4</sub> = Risk governance

β<sub>0</sub> is a constant (which is the value of dependent variable when all the independent variables are 0).

β<sub>1-4</sub> is the regression coefficients or change induced by X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> and X<sub>4</sub>

e = error term

## 4. RESEARCH FINDINGS AND DISCUSSIONS

In this study, a questionnaire was distributed to a sample of 72 respondents, resulting in 59 completed responses, which corresponds to a response rate of 81.94%. This rate is considered excellent and representative of the target population, as indicated by Mugenda and Mugenda (2008). They classify response rates of 49-59% as adequate, 60-69% as good, and above 69% as very good. Thus, an 81.94% response rate is robust enough to yield credible results. The study also explored factors influencing performance, noting that attributes like age are significant, as highlighted by Okunbo and Oghuvwu (2019). Karadag (2017) further suggests that older employees tend to accumulate experience over time, enhancing their productivity and capability. The research aimed to gather demographic information, including sex, age, educational level, and work experience, to assess participants' familiarity with their DT-SACCOs.

The demographic analysis of the respondents revealed that 32(54.24%) were male, while 27(45.76%) were female, indicating a small gender difference. Most respondents, 30(50.85%), fell within the 36 to 45 years age range, followed by 19(32.20%) aged 26 to 35 years, 9(15.25%) aged 46 to 55 years, and 1(1.69%) aged 56 to 65 years. In terms of education, 27(45.76%) of the respondents held a university undergraduate degree, 25(42.37%) had postgraduate degrees, and 7(11.86%) had college diplomas as their highest qualification. Regarding work experience, 27(45.76%) had worked for their SACCOs for 11 to 15 years, while 21(35.59%) had been with the DT-SACCOs for 21 to 25 years. Additionally, 4(6.78%) reported working for 5 to 10 years, another 4(6.78%) for 15 to 20 years, and 3(5.08%) had less than 5 years of experience.

### 4.2 Descriptive Statistics

The data used for analysis was collected using questionnaire. The questionnaire was designed on a 5-point Likert Scale; "strongly Disagree = 1: disagree= 2: neutral = 3: agree =4: strongly agree = 5". That data was analysed using quantitative approach to produce descriptive statistics Mean (M) and standard deviation (SD) for each indicator of the independent Variable (IV) as well as Dependent Variable (DV). Since these statistics were continuous, the results were transformed into continuous form using mean of means and interpreted as; strongly Disagree for measures between 1 and 1.8: disagree for measures above 1.8 and not exceeding 2.6: neutral for measures above 2.6 and up to 3.4: agree for any measure above 2.6 and not exceeding 4.2: strongly agree for measures above 4.2 and not above 5. The descriptive analysis was guided by the study objectives.

#### 4Effect of Risk Identification on Asset Quality

The first objective one was to establish the effect of risk identification on asset quality of DT-SACCOS in Kenya which guided the analysing to yield results in Table 1.

**Table 1: Risk Identification and Asset Quality**

Indicator	M	SD
The SACCO inspects business proposal and business plan to identify credit risks the SACCO is exposed to.	3.29	0.74
Our SACCO always evaluates the net worth of the borrowers by looking at Financial Statement analysis.	3.32	0.75
Our SACCO always assesses whether the clients are professionals in their business area.	3.57	0.96

Our SACCO follows established standards to assess their ability to repay the credit facility.	3.68	0.97
Our SACCO always use credit scoring approach to determine likelihood to default loan payment	3.61	0.95
A risk rating system is used to identify future risks	3.61	0.93
Our SACCO always identifies the collateral provided by the borrower	3.63	0.89
<b>Risk Identification</b>	<b>3.57</b>	<b>0.91</b>

**Source: Research Data (2023)**

The study found that the DT-SACCOs highly practiced risk identification, where the DT-ACCO moderately inspected business proposal and business plan to identify credit risks the SACCO was exposed to and moderately evaluated the net worth of the borrowers by looking at financial statement analysis. While These DT-SACCO always assessed whether the clients were professionals in their business area, they always followed established standards to assess their ability to repay the credit facility, always used credit scoring approach to determine likelihood to default loan payment. There were risk rating systems used to identify future risks where the DT-SACCOs always identified the collateral provided by the borrower. Based on these findings, then it was found risk identification highly affected asset quality of DT-SACCOS in Kenya. These findings confirm the findings in the research by Bosire (2017) which discovered risk analysis as processes to identify hazards, including the use of risk cause requests, documented records, and interviews to a great extent when utilizing risk lists as risk assessment instruments. According to the research, risk recognition has a substantial influence on financial performance. Also, the research by Mogga et al. (2018)'s indicated that risk identification is regarded as a technique of credit risk control that affected profitability, Sonali (2015) credit risk management strategies agreed includes ensuring that the bank's credit procedures comply with current regulations, which specified processes have been developed and implemented, and that responsibility for evaluating and approving loans has been appropriately and clearly allocated. More s, Mutua (2015) discovered a substantial relationship between asset return and risk recognition while Geitangi's (2015) found that risk management includes things like inspecting branch procedures and auditing the bank's financial statements. Risk management strategies like as benchmarking, client creditworthiness evaluation, risk rating, and leverage requirements are also significant. Furthermore, Wachira (2017) indicate that credit risk management has an impact on the profitability and because risk identification has been demonstrated to be one of the most essential parts of credit management, more time and attention should be paid to evaluating how much risk the borrower contributes to the loan portfolio. Managers can also determine whether or not the borrower will be able to repay the loan on time.

**Effect of Risk Measurement on Asset Quality**

The second objective which was find out the effect of risk measurement on asset quality of DT-SACCOS in Kenya, which was assessed to bring results in Table 2.

**Table 2: Effect of Risk Measurement on Asset Quality of DT-SACCOS in Kenya**

Indicator	M	SD
Our SACCO always analysis and appraises the borrower before approving loan facility to reduce occurrence of credit risk.	3.31	1.00
Our SACCO always measure profitability, efficiency and leverage of borrower before awarding loans	3.51	0.92
Our SACCO always classifies risks based on the amount of damage they cause so as to take correct measure to manage SACCO risks.	3.61	0.98
Our SACCO always evaluates loan performance on a monthly basis to assess risks on client business and loan repayment.	3.49	0.94
Our SACCO always estimates the magnitude of the consequences to assess impact of risks	3.46	0.93
Our SACCO requires guarantors from clients as risk reduction measures	3.47	0.97
<b>risk measurement</b>	<b>3.48</b>	<b>0.96</b>

**Source: Research Data (2023)**

According to the results, the performance of risk measurement towards enhancing asset quality was high while the DT-SACCO moderately carried analysis and sometimes appraised the borrower before approving loan facility to reduce occurrence of credit risk. This confirms the findings in the research by Mogga et al. (2018) that risk perception has a significant influence on MFI financial outcomes but disagreed with Makori (2018) risk assessment, on the other hand, had no significant influence on CB financial performance. The DT-SACCOs always measured profitability, efficiency and leverage of borrower before awarding loans as they always classified risks based on the amount of damage they caused so as to take correct measure to manage SACCO risks always evaluated loan performance on a monthly basis

to assess risks on client business and loan repayment. These DT-SACCOs always estimated the magnitude of the consequences to assess impact of risks always required guarantors from clients as risk reduction measures. These findings confirm those in the research by Karim (2019) that credit risk management strategies have a positive impact on the return on assets. According to Karim (2019), successful application of the risk rating technique to measure credit risk exposure is connected to a higher return on assets ratio, according to the study. These findings show that credit risk management methods and techniques have a significant influence on return on assets. Furthermore, Wanjohi (2016) revealed that credit assessment operations have a positive and significant relationship with profitability (Al-Husainy & Jadah, 2021).

#### **Effect of Risk Monitoring on Asset Quality of DT-SACCOs in Kenya**

The third was to establish the effect of risk monitoring on asset quality of DT-SACCOs in Kenya which was assessed to have results shown in Table 3.

**Table 3: Effect of Risk Monitoring on Asset Quality of DT-SACCOs in Kenya**

<b>Indicator</b>	<b>M</b>	<b>SD</b>
Our SACCO has approval authorities reserved for credit committee monitoring credit transaction	3.20	0.83
Our SACCO periodically reviews the borrowers rating assigned at the during credit granting and updates borrowers credit files	3.58	0.84
Our staff always observe written guidelines on credit approval process	3.49	0.86
We always monitor the flow of borrower's transactions	3.51	0.92
Our SACCO had developed a culture of being supportive to borrowers especially when in difficulties and are striving to deal with the situation	3.46	0.88
Credits to related parties are closely analysed and monitored	3.49	0.77
<b>Risk monitoring</b>	<b>3.46</b>	<b>0.85</b>

#### **Source: Research Data (2023)**

Based on these results, the Kenyan DT-SACCOs were actively carrying risk monitoring activities for enhancing asset quality. That was where the DT-SACCO had established approval authorities reserved for credit committee monitoring credit transaction as they periodically reviewed the borrowers rating assigned at the during credit granting and updated borrowers credit files their staff always observed written guidelines on credit approval process. These DT-SACCOs always monitored the flow of borrower's transactions as they had further developed culture of being supportive to borrowers especially when in difficulties and were striving to deal with the situation while credits to related parties were closely analyzed and monitored. These findings agree to those in the study by Karim (2019) that credit risk management methods such as monitoring have a favorable impact on asset returns. Effective adoption of the risk assessment technique to monitor credit risk exposure is associated to greater asset returns. The outcomes of the study demonstrate that credit risk management techniques have no statistically meaningful relationship with terms of asset returns (Jadah, Alghanimi, Al-Dahaan & Al-Husainy, 2020). These findings demonstrate that credit risk management approaches and tactics have a significant impact on asset returns.

#### **Effect of The Risk Governance on Asset Quality**

Objective four was to find out the effect of risk governance on asset quality of DT-SACCOs in Kenya which was assessed to obtain results shown in Table 4.

Table 4: Effect of the Risk Governance on Asset Quality

<b>Indicator</b>	<b>M</b>	<b>SD</b>
Our credit risk team reviews and recommends annually credit risk policies for the SACCO.	3.61	0.95
Our credit risk committee reviews and recommend on an annual basis the risk governance covenants	3.51	0.92
The credit department always checks at the collateral of the borrower during credit review	3.53	0.94
The SACCO participates in loan portfolio hedging against risks to ensure control of SACCO credit risks through credit rationing	3.54	0.99
Our SACCO engages in loan securitization to ensure client loan facilities are secure and SACCO credit loss minimized.	3.59	0.93
<b>Risk governance</b>	<b>3.56</b>	<b>0.94</b>

#### **Source: Research Data (2023)**

Informed by the results, there was active risk governance for enhancing asset quality. The credit risk team reviewed and recommended annually credit risk policies for the SACCO as they credit risk committee further reviewed and

recommended on an annual basis the risk governance covenants and the credit department always checked at the collateral of the borrower during credit review. Accordingly, the DT-SACCO participated in loan portfolio hedging against risks to ensure control of SACCO credit risks through credit rationing as they further engaged in loan securitization to ensure client loan facilities are secure and SACCO credit loss minimized. Notably, Bhattarai (2019) found that quality management ratio has a strong association with the ROA while Mogga et al. (2018) suggest that credit clearing was a major determinant of financial performance. Meanwhile Wachira report (2017) established that risk avoidance is the most important aspect of credit management, so more time and money should be invested in determining how much risk the borrower presents to the credit portfolio. As a result, risk management is important, but administrators must find a balance between gaining the client, whose risk is the probability of default, and locking the customer out and losing the interest revenue that the customer would have received (Jadah, Hasan & Al-Husainy, 2021).

#### 4.3 Inferential analysis

In order to determine whether the IVs; Risk Identification, Risk Measurement, Risk Monitoring, and Risk Governance, were reliable predictors of DV and asset quality for DT-SACCOS in Kenya, the study set out to determine whether or not they were. Because of this, the study used inferential analysis to develop the study model by first performing a correlation analysis and then multiple regressions.

##### 4.3.1 Correlation Analysis

Using Pearson's product method (PPM) at a 5% (0.05) level of significance, correlation analysis was carried out to determine whether there was a relationship between the DV and each IV. The results are shown in table 5.

**Table 5: Correlation Analysis**

		Asset quality	Risk identification	Risk measurement	Risk monitoring	Risk governance
Asset quality	1					
	59					
Risk identification	.394	1				
	.002					
	59	59				
Risk measurement	.358	-.147	1			
	.005	.266				
	59	59	59			
Risk monitoring	.467	.339	.243	1		
	.000	.009	.064			
	59	59	59	59		
Risk governance	.470	.254	.308	.284	1	
	.000	.052	.018	.030		
	59	59	59	59	59	

. Correlation is significant at the 0.01 level (2-tailed).

. Correlation is significant at the 0.05 level (2-tailed).

Source: Research Data (2023)

These results show that each of the IV; risk identification (p-value =0.002), risk measurement (p-value = 0.005), risk monitoring (p<0.01), and risk governance (p-value <0.01), was significantly related to asset quality of DT-SACCOS in Kenya since the p-value for each was less than 0.05. It is further shown that while risk identification (p=0.002; r = 0.394), and risk measurement (p-value = 0.005; r = 0.358) had moderate significant relationship with asset quality of DT-SACCOS in Kenya since the correlation coefficient (r) was below 0.3, risk monitoring (p<0.01; r = 0.467) and risk governance (p-value <0.01; r = 0.470) had significant relationship with asset quality of DT-SACCOS in Kenya since the correlation coefficient (r) was between 0.3 and 0.6.

##### 4.3.2 Regression Analysis

The study regressed all the IV's; risk identification, risk measurement, risk monitoring, and risk governance, against the DV; Asset quality of DT-SACCOS in Kenya to estimate the study model in equation (i)

The results are captured in Table 6.

**Table 6: Regression Statistics**

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-0.038	0.2		-0.189	0.851
Risk identification	0.337	0.134	0.292	2.518	0.015
Risk measurement	0.212	0.09	0.268	2.340	0.023

Risk monitoring	0.182	0.09	0.232	2.018	0.049
Risk governance	0.236	0.109	0.248	2.171	0.034
R Square	0.4362				
Adjusted R Square	0.3945				
<b>ANOVA<sup>a</sup></b>	0.000				

Source: Research Data (2023)

According to the results, the coefficient of determination ( $R^2$ ) of 0.4362, implies that 43.62% of change in asset quality of DT-SACCOS in Kenya is explained by risk identification, risk measurement, risk monitoring and risk governance.

The Analysis of Variance (ANOVA) statistics to establish whether the beta value;  $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$  (i.e. the coefficients of the IVs are all zero) which implies an insignificant in estimating asset quality of DT-SACCOS in Kenya or at least one  $\beta_i \neq 0$  which implies a significant model in estimating asset quality of DT-SACCOS in Kenya. The results show that in ( $F= 10.449$ ,  $P<0.01$ ),  $p<0.01$  which is less than  $p\text{-value} < 0.05$ . Since  $p\text{-value} < 0.05$ , then at 5% significance level ( $\alpha = 0.05$ ), there is enough evidence to conclude that at least one of the; risk identification, risk measurement, risk monitoring, and risk governance is useful explaining performance of DT-SACCOS in Kenya.

The primary objective of this study was to ascertain the impact of risk identification on the asset quality of Deposit-Taking Savings and Credit Cooperatives (DT-SACCOS) in Kenya. This analysis sought to determine the existence of a significant relationship between risk identification and asset quality at a significance level of 0.05, as reflected in the regression coefficients presented in Table 6. The results indicate a T-value of 2.518 and a p-value of 0.015, demonstrating that the p-value is less than 0.05. Consequently, this finding provides robust evidence that risk identification significantly influences the asset quality of DT-SACCOS in Kenya, affirming its role as a critical estimator in this context.

These findings are corroborated by previous research conducted by Makori (2018), which highlighted that risk identification notably impacts organizational performance, as indicated by an ANOVA result of less than 0.05, underscoring the strong relationship among the studied factors. Similarly, Mogga et al. (2018) revealed a significant positive correlation between risk identification and financial performance, suggesting that most banking institutions consider risk identification as a vital credit risk management technique that significantly affects profitability (Bosire, 2017). The study further found that DT-SACCOS actively engage in risk analysis and have established procedures for hazard identification, employing various instruments such as risk cause requests, documented records, and interviews. This aligns with the conclusions of Wachira (2017), which also indicated a significant positive effect of risk identification on financial performance. Given that risk identification is a fundamental component of credit management, it is imperative for managers to devote sufficient attention to assessing borrower risk contributions to the loan portfolio. This assessment enables managers to gauge borrowers' repayment capabilities effectively. Moreover, risk management encompasses critical processes such as the examination of branch procedures and the auditing of financial statements (Mutua, 2015). Strategies such as benchmarking, evaluation of client creditworthiness, risk rating, and leverage requirements are vital in this regard. Additionally, the complexity and volume of banking activities should align with the systems employed to identify and assess credit risk. For banks to accurately gauge their credit risk exposure, these systems must provide reliable, timely, and pertinent information (Sonali, 2015; Valsamakis et al., 2015). By focusing on these areas, DT-SACCOS can enhance their asset quality and overall financial performance, thereby achieving more effective credit risk management.

The second objective of the study aimed to determine the impact of risk measurement on the asset quality of Deposit-Taking Savings and Credit Cooperatives (DT-SACCOS) in Kenya. The analysis revealed a T-value of 2.340 and a p-value of 0.023, indicating that the p-value is less than 0.05. This result confirms the existence of a significant relationship between risk measurement and asset quality at a significance level of 0.05, thereby supporting the assertion that risk measurement serves as a valuable estimator of asset quality within DT-SACCOS in Kenya. However, these findings are inconsistent with those reported by Karim (2019) and Mogga et al. (2018), who found no statistically significant relationship between credit risk management techniques and a bank's ability to mitigate credit risk exposure while enhancing financial efficiency, as measured by return on assets. In contrast, the current study's results align with the research conducted by Makori (2018), which highlighted the positive influence of risk assessment on performance. Furthermore, Thisika and Muturi (2017) explored the relationship between credit risk management and loan efficiency in Kenyan commercial banks, revealing a statistically significant link between risk assessment and non-performing loans. Similarly, Wanjohi (2016) indicated a positive and significant relationship between risk assessment activities and commercial bank profitability. Despite these positive correlations, the study also acknowledges that certain developmental issues may lead to a decline in the consistency of loan portfolios. Consequently, some banks have opted to reduce lending to riskier firms to enhance portfolio efficiency (Kwaku, 2015). This suggests that while risk measurement is important for asset quality, challenges persist in maintaining a stable loan portfolio.

Using third objective, establish the effect of risk monitoring on asset quality of DT-SACCOS in Kenya, the research tested existence of significant effect of risk monitoring on asset quality of DT-SACCOS in Kenya shown in the results, ( $T= 2.018$ ;  $p= 0.049$ ). According to the results, the p-value is less than 0.05 is an indication that there is a significant relationship between risk monitoring and asset quality of DT-SACCOS in Kenya. Therefore, at  $\alpha = 0.05$ , there is enough

evidence that the risk monitoring is a useful estimator of asset quality of DT-SACCOS in Kenya. These findings confirm those in the research by Karim (2019) effective adoption of technique to monitor their credit risk exposure is associated to greater asset returns. These findings demonstrate that credit risk management approaches and tactics have a significant impact on how successful banks are in terms of asset returns. Makori (2018) exposed credit risk assessment as having a favourable impact on loan outcomes, and ANOVA results indicated a connection between credit risk assessment and loan performance, indicating a tight association between study variables. Meanwhile, risk assessment, according to Bosire (2017), has a substantial impact on MFI financial outcomes. A positive, robust, and statistically significant association was discovered between credit evaluation and non-performing loans by Muturi (2017) as well as Wanjohi (2016). So, some of the deployment difficulties, may result in a reduction in the loan portfolio's stability. In order to enhance portfolio performance, several banks have stop lending to firms believed to be risk-averse. The fourth objective of the study examined the impact of risk governance on the asset quality of Deposit-Taking Savings and Credit Cooperatives (DT-SACCOS) in Kenya. The findings showed a T-value of 2.171 and a p-value of 0.034, indicating a significant relationship between risk governance and asset quality, as the p-value is less than 0.05. Thus, at a significance level of  $\alpha = 0.05$ , there is sufficient evidence to conclude that risk governance is a valuable estimator of asset quality for DT-SACCOS. These results contrast with those of Bhattarai (2019), which found no significant relationship between risk susceptibility and financial outcomes in Nepal's commercial banks. Conversely, they align with Sun and Chang (2018), who identified a link between credit risk management and return on equity (ROE). Supporting this, Nwude and Okeke (2018) indicated that effective credit risk management positively influences ROE, while Wanjohi (2016) noted a significant relationship between debt collection operations and credit risk management practices, further enhancing commercial bank profitability. Moreover, credit risk management practices have proven effective in significantly reducing non-performing loans in Kenyan commercial banks (Geitangi, 2015). Although some studies have suggested a negligible connection between capital adequacy ratio (CAR) and ROE, they noted a negative correlation between non-performing loan ratio (NPLR) and both ROE and return on assets (ROA). Notably, Wachira (2017) emphasized risk avoidance as a critical aspect of credit management, highlighting the need for lending institutions to invest in assessing the risk associated with borrowers. This approach necessitates a balance between acquiring clients and managing the risk of potential defaults, as losing high-risk clients may also result in the loss of interest revenue.

The equation derived from these results was;

Asset quality of DT-SACCOS in Kenya ( $\hat{Y}$ ) =  $-0.038\text{cons} + 0.337 \text{ risk identification } (X_1) + 0.212 \text{ risk measurement } (X_2) + 0.182 \text{ risk monitoring } (X_3) + 0.236 \text{ risk governance } (X_4)$

Thus, asset quality of DT-SACCOS in Kenya decreases by  $-0.038$  units regardless of whether the explanatory variables for credit risk management are present or not. The fitted model also shows the impact the exploratory variables of credit risk management have on the asset quality of DT-SACCOS in Kenya. One unit increase in the risk identification ( $X_1$ ) leads to a  $0.337$  unit increase in the asset quality of DT-SACCOS in Kenya and One unit decrease in the risk identification ( $X_1$ ) leads to a  $0.337$  unit decrease in the asset quality of DT-SACCOS in Kenya. One unit increase in risk measurement ( $X_2$ ) leads to a  $0.212$  unit increase in the asset quality of DT-SACCOS in Kenya while one unit decrease in risk measurement ( $X_2$ ) leads to a  $0.212$  unit decrease in the asset quality of DT-SACCOS in Kenya. While a one unit increase in risk monitoring ( $X_3$ ) leads to a  $0.182$  unit increase in the asset quality of DT-SACCOS in Kenya, a one unit decrease in risk monitoring ( $X_3$ ) leads to a  $0.182$  unit decrease in the asset quality of DT-SACCOS in Kenya. As a one unit increase in risk governance ( $X_4$ ) leads to a  $0.236$  unit increase in the asset quality of DT-SACCOS in Kenya, a one unit decrease in risk governance ( $X_4$ ) leads to a  $0.236$  unit decrease in the asset quality of DT-SACCOS in Kenya.

It is shown in the results show that each of; risk identification, risk measurement, risk monitoring, and risk governance had positive coefficients, which means that they were all directly proportional to asset quality of DT-SACCOS in Kenya. This means that an increase in any of IVs; risk identification, risk measurement, risk monitoring, and risk governance leads to increase in asset quality of DT-SACCOS in Kenya and any decrease in any of them will have an opposite effect on Asset quality of DT-SACCOS in Kenya.

## 5. CONCLUSION AND RECOMMENDATIONS

### 5.1 Conclusions

In conclusion, the study poses that, at 5% significance level risk identification is an important for improving asset quality of DT-SACCOS in Kenya More specifically, risk identification has positive significant effect on asset quality of DT-SACCOS in Kenya in Kenya ( $p=0.015$ ;  $\beta= 0.337$ ;  $r= 0.394$ ). This through inspecting; business proposal and business plan to identify credit risks the SACCO, evaluating the net worth of the borrowers by looking at financial statement analysis, assessing whether the clients were professionals in their business area, following established standards to assess their ability to repay the credit facility, always using credit scoring approach, having risk rating systems for identifying future risks and identifying the collateral provided by the borrower.

The study concludes that risk measurement has a statistically significant and positive effect on asset quality of DT-SACCOS in Kenya ( $p=0.023$ ;  $\beta=0.212$ ;  $r= 0.358$ ). This risk measurement involves analysis and appraising the borrower before approving loan facility to reduce as well as measuring profitability, efficiency and leverage of borrower before awarding loans in addition to classifying and managing SACCO risks. It also involves always evaluating loan performance, loan repayment and consequences risks so as to implement associated risk reduction measures.

The research concludes that risk monitoring has positive significant effect on asset quality of DT-SACCOS in Kenya ( $p= 0.049$ ;  $\beta= 0.182$ ;  $r= 0.467$ ) where the risk monitoring activities are; establishing approval authorities; periodic review of borrowers rating assigned, updating borrowers credit files, observing written guidelines on credit approval process, monitoring borrower's transactions, supporting borrowers especially when in difficulties and deal with credit situation while credits to related parties through analysis and monitoring.

The study concludes that risk governance positively and significantly affects asset quality of DT-SACCOS in Kenya ( $p= 0.034$ ;  $\beta= 0.236$ ;  $r= 0.470$ ). In this case, active risk governance makes sure that review and recommendations on credit risk policies should be frequent while they check at the collateral of the borrower during credit review. DT-SACCOS ensure that they participate in loan portfolio hedging against risks and engage in loan securitization.

### **5.2 Policy Recommendations**

The study recommends that the DT-SACCOS in Kenya in Kenya, guided by the SASRA prudential guidelines should enhance their risk identification policies by ensuring that their procedure authenticity of business proposal and business plan are effective to bale to identify credit risks and net worth of the borrowers. They should also set proper standards to assess their ability to repay and also measure the credit score of the borrowers correctly.

Secondly, the study recommends that DT-SACCOS in Kenya in Kenya. should enhance their risk measurement procedure to ensure that there is thorough analysis and appraisal of the borrower before approving loan. This will include measuring profitability, efficiency and leverage of borrower. The policy on classifying and managing risks should always be followed cautiously and the DT-SACCOS should carefully evaluate loan performance, loan repayment and consequences risks so as to implement associated risk reduction measures

The research further recommends that DT-SACCOS in Kenya in Kenya should enhance thier that risk monitoring polices and procedures to ensure approval authorities are well specified and empowered. There should clear and effective policies the manner in which review of borrowers rating should be done and also the way the borrowers credit files are updated. These DT-SACCOS should make sure that the written guidelines on credit approval process are always up to data and are strictly followed such that there is efficiency in, monitoring borrower's transactions and deal with credit situations.

The study recommends that DT-SACCOS in Kenya in Kenya should ensure their risk governance guidelines correctly address credit procedures and policies on review and recommendations and clearly spell out the requirements concerning checks on collateral of the borrower during credit review.

### **5.3 Recommendations for future Research**

The current study used primary data which were purely the respondents' opinions. So, further research should be done using secondary data to conform these results. More so this was a cross sectional research which only gather data from a large number of people at a single point in time. So, further research should be done using longitudinal research approach.

The study used quantitative approach which did not address qualitative concerns. For this reason, more research should be done using qualitative approach.

## **Disclaimer (Artificial intelligence)**

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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